Unintentional and Intentional Injury

Health Objectives for the Year 2010: Reduce the incidence and severity of unintentional and intentional injuries.

Health Implications

In 1995, 143,000 Americans died from injuries sustained from causes such as motor vehicle crashes, falls, fire, drownings, poisonings, homicides, and suicides. This number translates into the death by injury of more than 390 people each day, of which at least 50 are children.[1] The cost of injury in 1995 was estimated at $260 billion.[2] One death out of every 14 in the United States results from injury. Approximately two-thirds (65%) of these deaths were classified as unintentional injury (e.g., motor vehicle crashes, Fire and burns, falls) and one-third (35%) as being caused by intentional injury (e.g., homicide, suicide, abuse, assault).[1]

Unintentional injury is the fifth leading cause of death in Lancaster County. It is the number one killer of Lancaster County residents between the ages of 1 and 29 years.[3]

The risk of injury is so great that most people sustain a significant injury at some time during their lives. Nevertheless, this widespread human damage is too often benignly accepted in the erroneous belief that injuries happen by chance and are the result of unpreventable "accidents." These occurrences are not "accidents," or random, uncontrollable acts of fate, however; injuries are predictable and preventable, and preventing them costs much less than treating them.[1]

Violence is pervasive in our society and reduces the quality of life. Americans are shocked by reports of children killing other children in schools, and parents are concerned about the safety of their children at school. Reports of gang violence even in small towns and rural areas make people fearful for their own and their family's safety. An increase in suicides among young people and the elderly raises concerns about the vulnerability of people in these age groups. Intimate-partner violence and sexual assault threaten women in all walks of life. Violence claims the lives of many of our nation's young people and threatens the health and well-being of many Americans. On an average day in the United States, 70 people die from homicide, 87 people commit suicide, as many as 3,000 people attempt suicide, and at least 18,000 people survive assaults.[1]

Domestic violence occurs at all hours, seven days a week, and in all parts of Lincoln and Lancaster County. The number of clients served at both

Table 1. Unintentional and Intentional Injury Indicators

	Lancaster Recent	Lancaster Objective 2010	Nebraska Recent	Nebraska Objective 2010	National Recent	National Objective 2010[1]
Unintentional Injury						
Deaths due to motor vehicle crashes per 100,000 population	11.5[2]	7.0	19.0[2]	--	15.8[3]	11.4
Injuries due to motor vehicle crashes ("A" and "B" crashes) per 100,000 population	660.5[2]	634.2	646.9[2]	--	1323.0[4]	953.0
Injuries (emergency room visits) per 1,000 population	97.5[5]	92.0	--	--	131.0[6]	111.0
Injuries (emergency room visits) due to falls per 1,000 population	25.2[5]	20.1	20.0[7]	--	--	--
Injuries (emergency room visits) due to fire and burns per 1,000 population	3.1[5]	1.4	1.0[7]	--	--	--
Percent of youth who always wear safety belt	34.4[8]	55.0	18.7[9]	--	--	--
Intentional Injury						
Suicides per 100,000 population	12.3[10]	9.0	12.2[11]	--	11.2[12]	9.6
Percent of youth carrying weapons	19.9[9]	15.0	17.0[10]	--	20.4[14]	<15.0
Percent of youth indicating they have been in a physical fight in the past 12 months	37.4[9]	27.1	31.4[10]	--	38.7[14]	<35.0
Investigated cases of child abuse and neglect per 1,000 population	27.2[15]	20.0	18.3[15]	--	--	--

the Rape Spouse Abuse Crisis Center (RSACC) and Friendship Home has increased, but calls to RSACC's 24-hour Crisis Line and requests for shelter have declined from record levels in 1997.[4]

There were only eight days in 1998 when law enforcement officers did not investigate either a domestic assault or protection-order violation in Lancaster County. There were 15 days in which at least 10 cases were investigated.[4]

Poverty, discrimination, a lack of education, and limited employment opportunities are important risk factors for violence and must be addressed as part of any comprehensive solution to the epidemic of violence. Strategies for reducing violence should target youth, before violent beliefs and behavioral patterns can be adopted.[1]

The public health approach to reducing violence is multidisciplinary and enlists many strategies and programs. Our society still has a strong conviction that violence can be prevented. Much has been learned about the impact of violence and the burden it imposes on society. Additionally, there are many potentially effective intervention strategies, such as parent training, mentoring, home visitation, and social-cognitive curricula, for violence prevention.[1]

Five causes of injury (motor vehicle crashes, falls, Fire and burns, suicide, and child abuse and neglect) have been selected for emphasis in this report due to their tremendous public health impact. The entire community is affected by these five causes of injury, either directly or indirectly. The injuries result in heavy personal and societal monetary costs (i.e. medical care, rehabilitation, insurance rates, lost or reduced wages) as well as costs related to human suffering, such as emotional and psychological damage, and in some cases the propagation of negative life-altering behavior (e.g. many abused children grow up to become child abusers or criminals.)[10]

(Please see the Animal Control chapter for information about injuries caused by contact with animals.)

Motor Vehicle Crashes

Motor vehicle crashes (MVC) remain the single largest cause of injury deaths in the United States: in 1997, 41,967 people died as a result of a motor vehicle crash. Of those, 315 occurred in Nebraska, including 21 in Lancaster County.[5] The direct cost of all these fatalities to the nation was $47 billion.

An average of 2.2 million Americans per year suffer a disabling MVC, related injury.[6] Almost half of all spinal cord and traumatic brain injuries are caused by these crashes.[7] Over 13,000 Lancaster County residents were treated in local emergency rooms for injuries resulting from a motor vehicle crash during the 1992–95 four-year period. Motor vehicle crashes were the leading cause of accidental death in Lancaster County in 1994 and the second leading cause of accidental death in 1995.[3] The magnitude of the direct and indirect impact on society of MVC, related death and injury dictate that it remain a priority public health concern.

Falls

Falls are the leading cause of injury in Lancaster County. Falls accounted for 23% of the injuries treated by local hospital emergency rooms from 1992 to 1995. Over 7,000 Lancaster County children under 14 years of age were seen by emergency room doctors for treatment of fall-related injuries during the 1992–95 four-year period.[3] Childhood fall injuries can result in disabilities that have lifelong effects. Nationally, falls are the second leading cause of injury deaths among people aged 65 to 84 and the leading cause for people aged 85 and older. In Lancaster County, falls are the most common cause of injuries and hospital trauma admissions among the elderly. The impact of these

injuries on the quality of life is enormous. Half of all elderly adults hospitalized for hip fracture cannot return home or resume independent living after the injury.[1] This is a tragic conclusion to the lives of individuals who might otherwise be healthy.

Fire and Burns

In 1997, an estimated 83,000 children aged 14 and under were treated in the nation's hospital emergency rooms for burn-related injuries. Fires are the second leading cause of unintentional injury death among children. Losses to society from childhood burn deaths and injuries total approximately $5.5 billion annually.[8] An average of 600 Lancaster County residents each year receive emergency room treatment for burn injuries.[3] Burns have long been recognized as among the most painful and devastating injuries a person can sustain and survive. Burns often require long periods of rehabilitation, multiple skin grafts, and painful physical therapy, leaving victims with lifelong physical and psychological trauma. Older adults are at increased risk of fire-related death because they are more vulnerable to smoke inhalation and burns and less likely to recover.[8]

Suicide

Suicide is the ninth leading cause of death in the United States, and the second leading cause of death among Nebraska males aged 15 to 29.[1,9] It has been estimated that for every suicide resulting in death, eight others are attempted.[10] Although death of any sort has an emotional impact on surviving friends and family members, suicide is unique. Suicide has a social stigma, which leaves survivors to cope not only with the grief and upheaval of losing a loved one but also with the perceptions and biases of friends, neighbors, and society in general. Suicide may put tremendous stress on family members and friends who blame themselves for their loved one's actions and subsequent death.[11]

Child Abuse and Neglect

"Child abuse" is a general term used to encompass the physical abuse, psychological or emotional abuse, sexual abuse or sexual exploitation, or neglect of a child.[11] In the United States, more than 3 million reports of child abuse and neglect were filed with authorities in 1997.[12] Child abuse is not confined to any socioeconomic, ethnic, or religious sector of society. It is a function of poorly controlled adult behavior, which is usually the result of emotional, economic, or family stress.[10]

Child abuse carries high costs for individuals and society. In cases of severe injury or death, the human suffering cannot be calculated. Seriously abused and neglected children can suffer permanent neurological, physical, and developmental damage. The transfer of sexually transmitted diseases is a frequent result of child sexual abuse, and unwanted pregnancies are not uncommon. Even less severely abused children may be cognitively, linguistically, and physically impaired.[10]

Retrospective studies of institutionalized adults reveal a significant number of childhood abuse cases. Among juveniles arrested for delinquent acts, 80–90% report a history of abuse and neglect. Adults who mistreat children and/or spouses frequently were abused children themselves. Long-term problems, such as dropping out of school, abusing alcohol and other drugs, committing suicide, or participating in a multitude of other behaviors that have a negative impact on the community, are also often associated with victims of child abuse.[13]

Current Status and Trends

Motor Vehicle Crashes

According to the Federal Department of Transportation, the societal cost of motor vehicle crashes exceeds $150 billion annually. The motor vehicle death rate per 100,000 people is especially high among 16-year-olds to 24-year-olds and people aged 75 years and older. At all ages, males have higher motor vehicle death rates per 100,000 people compared to females.

Rates of motor vehicle deaths have declined substantially over the past 25 years, even taking the increasing numbers of drivers and miles traveled into account. For example, had the mileage death rate of 1972 prevailed in 1996, the number of deaths would have been almost 110,000 rather than 43,399. Over the past three decades, dramatic progress has been made in reducing motor vehicle injuries by (1) understanding the factors that increase the risk of injury; (2) designing interventions to reduce these risks; (3) implementing and then evaluating a wide array of interventions assessing their benefits and costs; and (4) providing this scientific foundation to inform individual and business choices and public policy judgments.[2]

On January 1, 1993, Nebraska joined the growing number of states legislating mandatory safety belt use. Forty-nine states have safety belt laws. The enactment of Nebraska's law, increased enforcement, and enhanced and expanded public education efforts have resulted in a greater than 50% increase (33% in 1992, 67.9% in 1999) in safety belt use statewide. During the same period, Lancaster County safety belt use increased from 38% to 66.9%. Although this is encouraging, there is room for improvement. Young people continue to be inconsistent users of safety belts. According to the 1999 Lincoln–Lancaster County Youth Risk Behavior Survey, only 34.4% of Lancaster County youth always wear a safety belt when riding in a car being driven by someone else. In 1996, 95.1% of Lancaster County parent participants of the Behavioral Risk Factor Survey who had children aged ten and under reported that their children "always" or "nearly always" wore a safety belt or rode in a child safety seat. However, local voluntary community-wide child safety seat checks conducted in 1997 and 1998 found that over 90% of the seats inspected were improperly installed and/or used.

Trauma Registry data for 1997 provided by BryanLGH Medical Center West reveals the economic impact of restraint use. The total hospital cost for restrained patients was $1,799,309 compared to $2,705,276 for unrestrained patients. The average cost per restrained patient was $19,586 compared to $29,088 for the unrestrained patient. Increased community-based educational efforts, such as safety seat inspection activities, in conjunction with stronger child passenger safety laws and continued technological advances will further decrease the risk of death and injury to motor vehicle occupants.

Driver- and passenger-side Supplemental Restraint Systems (SRS), or air bags, became standard safety equipment in all vehicles manufactured in the United States beginning with the 1998 model year. Air bags have demonstrated their effectiveness by preventing and reducing the severity of occupant injuries. Continued advances in air bag technology will provide even greater protection for all vehicle occupants.

Alcohol continues to be a leading factor in MVC-related and mortality. (Please see the Alcohol and Other Drugs chapter for more information.)

Leading Causes of Injuries[1]	Injuries
1. Falls	11,006
2. Motor Vehicle Accidents	5,812
3. Overexertion	4,466
4. Dangerous Tools, Appliances, Machinery	4,108
5. Group Sports	2,641

Leading Number of Days of Hospital Stay[2]	Days
1. Falls	5640
2. Poisonings & Drug Reactions	3494
3. Medical Complications & Misadventures	1538
4. Motor Vehicle Accidents (traffic & nontraffic)	564
5. Suicide & Self Inflicted Injury	437

Leading Causes of Injury Deaths[3]	Deaths
1. Suicide	51
2. Motor Vehicle Accidents (traffic & nontraffic)	37
3. Falls	36
4. Submersion, Suffocation, & Foreign Bodies	11
5. Other Accidents	10

Tables 2–4: Leading causes of injuries, length of hospital stays, cause of injury deaths; Lancaster County.

Falls

In 1995, falls resulted in the deaths of 11,275 people nationwide; among those 7,900 were over the age of 65. Mortality from falls declined by 11% from 1985 to 1995., but among the elderly, the rate increased slightly. Factors that contribute to falls include dementia, visual impairment, neurologic and musculoskeletal disabilities, psychoactive medications, and difficulties with gait and balance. Environmental hazards such as slippery surfaces, uneven floors, poor lighting, loose rugs, unstable furniture, and objects on floors also may play a role.[1]

Falls are the leading cause of nonfatal injury visits to emergency rooms, accounting for approximately 8 million visits yearly.[2] The death rate from falls among children aged 14 and under declined by 36% from 1987 to 1996. However, falls remain the leading cause of unintentional injury for children. Head injuries are associated with the majority of deaths and severe injuries resulting from falls. More than 80% of fall-related injuries among children ages four and under occur in the home. Among older children, ages 5 to 14, 65% of fall-related injuries occur in the home and 23% occur at school. Each year an estimated 211,000 children are treated in hospital emergency rooms for playground-related injuries.[8]

Falls resulted in 21,360 injuries in Lancaster County between 1992 and 1995. The three most common identifiable causes of falls in Lancaster County were (1) tripping, slipping or stumbling; (2) falling from playground equipment; and (3) falling from stairs or steps.[3]

Falls will continue as a leading cause of injury until a comprehensive, multidisciplinary, epidemiologically-based prevention effort is established and maintained.

Fire and Burns

In 1996 in the United States, nearly 800 children aged 14 and under died because of fire and burn-related injury. During that same year, nearly 3,000 children aged 14 and under were treated in emergency rooms across the country for fireworks-related injuries.[8]

Nebraska hospitals treated 1,285 burn patients in 1996. The average length of stay was seven days and 1,033 total patient-days were spent in Nebraska hospitals due to fires and burns.[14] Nearly 2,500 Lancaster County residents received emergency room treatment for burn-related injuries during the 1992–95 four-year period.[3] Saint Elizabeth Regional Medical Center's Burn Registry documents 590 admissions to its Burn Unit during 1998. The average patient age was 31 years. The leading cause of burn unit admissions was contact with hot liquids and vapors.

Most fire and burn injuries are categorized as being caused by either "fire and flames" or "hot substance or

object, caustic or corrosive materials, and steam." Scald burn injury (caused by hot liquid or steam) is the most common type of burn-related injury among young children, while flame burns (caused by direct contact with fire) are more prevalent among older children.[8]

The number of Lancaster County burn victims aged four and under requiring emergency room treatment increased from 71 to 135 from 1992 to 1995.[3]

Suicide

In 1996 suicide was the ninth leading cause of death in the United States for all ages. Among adolescents and young adults (15–24 years of age) in 1997, suicide was the third leading cause of death.[1]

Over 25% of Lancaster youth surveyed for the 1997 Youth Risk Behavior Survey reported having seriously considered suicide within the previous 12 months. This percentage was above both the national (20.5%) and Nebraska (23%) figures. However, it does represent a decrease in the rate of youth considering suicide from 1995 (29.5%). The Lancaster County suicide death rate decreased slightly from 1995 (14.0%) to 1997 (12.4%).[15]

In 1998, there were 180 completed suicides in Nebraska, making suicide the state's ninth leading cause of death. The most common method of suicide in Nebraska was the use of firearms.[9]

Suicide prevention efforts typically focus on individuals who have attempted suicide and survived. This strategy tries to prevent further attempts and completion. In Lancaster County, community and school professionals are now attempting to identify high-risk individuals and intervene before suicidal thoughts become suicide attempts. An understanding of risk factors (which include being white, young, elderly, male, widowed or divorced, and/or socially isolated or having made a previous attempt or having recently experienced the loss of a loved one or employment) aid in the identification of high-risk individuals and in the early detection of potential suicides.[16]

Child Abuse and Neglect

Each day in the United States four children die from child abuse and 13,700 others are abused and neglected.[17]

Investigations by state child protection agencies in 48 states determined that 1,012,000 children were victims of child abuse and neglect in 1994. This figure represents a 27% increase from 1990, when approximately 800,000 children were found to be victims of maltreatment. During the five-year period from 1990 through 1994, the agencies reported that a total of 5,400 children died as a result of abuse or neglect.[18]

In 1997, 8,140 cases of child abuse and neglect were investigated in Nebraska, involving 4,054 children. Since 1985, the number of investigated cases of child abuse and neglect in Nebraska has increased 2.4%. A total of 1,519 Lancaster County child abuse and neglect cases were investigated in 1997. These cases involved 938 children.[18]

Several studies suggest that even more children suffer from abuse or neglect than are reported in the official statistics. The Third National Incidence Study of Child Abuse and Neglect (a study involving 5,700 community professionals who come into contact with children) estimates that almost 44 children per 1,000 in the population may have been victims of abuse or neglect.[19]

Progress has been made in identifying specific risk factors that may predispose an individual or family to child abuse. Families identified as at-risk for child abuse often share common indicators.[16] These indicators are the logical focus of prevention strategies:

- parent(s) who were abused in childhood or exposed to abnormal child-rearing practices
- drug and alcohol abuse
- mental disability
- mental illness
- financial or emotional stress
- parental expectations that are inconsistent with the stage of growth and development of a child
- no relief from the care of children for a parent or guardian.

Successful intervention strategies will require the combined efforts of educators, health care professionals, law enforcement officers, and legislative officials. Implementing a strategy to reduce the incidence of child abuse will require a substantial allocation of both human and financial resources throughout the community.

Health Disparities

Unintentional Injury

Unintentional injuries are the second leading cause of death for Native-American men and the third leading cause for Native-American women. More than 1,000 Native Americans die from injuries and 10,000 more are hospitalized for injuries each year. Among the factors that contribute to the high rates of death are rural or isolated living, minimal emergency medical services, and great distances to sophisticated trauma care.[1]

Minority children risk greater injury and less care (or more expensive care) than white children. Their families are more likely to lack health insurance; have more difficulty obtaining appropriate and necessary medical care; and have lower incomes, creating significant financial barriers to care. The children themselves are more likely to receive care in hospital emergency rooms, are less likely to receive life-saving preventive services, and practice fewer safety behaviors.[8]

Among children aged 14 and under, Native-American children have the highest unintentional injury death rate in the United States and are two times more likely to die from unintentional injury than white children. Factors that contribute to higher death and injury among Native-American children are more strongly associated with economic conditions than culturally-based differences in parenting.[8]

Black children aged 14 and under have the second highest unintentional injury death rate in the United States and are 1.7 times more likely to die from unintentional injury than White children. More than 45% of Black children are poor, which is approximately four times the poverty rate of White children. In addition, only 39% of Black children live with both parents.[8]

Native-American children aged 14 and under have a motor vehicle occupant death rate two times that of White children. Restraint use is lower in rural areas and low-income communities. Lack of access to affordable child safety seats contributes to a lower usage rate among low-income families. However, of the low-income families who own a child safety seat, 95% use it.[8]

Children aged ten and under are injured from falls at a rate of about twice that of the total population. Black children aged 14 and under have a fall-related death rate that is one and a half times higher than that of White children. Low-income children are more likely to be injured from falls due to improper supervision and deficiencies in the environment, including old and deteriorating housing.[8]

Black children are more than three times as likely and Native-American children are more than two times as likely as White children to die in a fire. Children aged four and under and children with disabilities are at the greatest risk of burn-related death and injury.[8] In 1998, 76.7% of all the admissions to the Saint Elizabeth Regional Medical Center's Burn Unit were male. Whites composed 88.8% of the those admitted to the Burn Unit, followed distantly by Hispanics at 6.5%.

Intentional Injury

In Lancaster County, the White population has a suicide death rate of 12.9% compared to the Black rate of 10.0%; Native-American, 9.7%; Asian, 9.6%; and Hispanic, 8.0%.[15]

Although Black youth had a lower suicide rate than have White youth, from 1986 to1995, the rate in 1986 for Black youths aged 10–19 years increased from 2.1 to 4.5 in 1995 per 100,000 population – a 114% increase. Suicidal behavior among all youths has increased in the United States from 1980–1995; however, rates for Black youths have increased more.[20]

The race of the majority of those people either arrested for or victimized by domestic violence is predominantly White. However, between 1997 and 1998 the proportion of those arrested and the victims who were White declined. In 1998, 77% of victims of domestic assault and protection-order violations were White, and 61% of the offenders were White. That compares to 79% of victims and 66% of offenders as White in 1997.[20]

Public Health Infrastructure

Although significant advances in the field of injury prevention have taken place during the 1990s, opportunities for protecting citizens from needless harm are even greater as we enter the twenty-first century. Health departments must be in a position to explore all possibilities of increasing the safety of those served.

New and enhanced safety technology, communication systems, education strategies, and data management tools are being developed and must be incorporated into state and local injury-control efforts. If the public health infrastructure cannot support integration of these resources, most likely communities will go without, resulting in greater risks of injury to their populations.

Recommendations

- Promote mandatory, comprehensive, community-based, injury prevention and personal safety programs.
- Support conflict-resolution training as a required class for all university education majors.
- Fund primary prevention programs that address the need for parents to raise healthy and safety-minded adolescents.
- Promote the adoption of a primary safety belt law.
- Increase capacity for enhancement of local injury data management (collection, analysis, and reporting).
- Develop a comprehensive, multi-disciplinary strategy to address community, youth, and family violence.
- Increase public awareness of falls as a preventable injury and design a comprehensive education campaign addressing fall prevention.

- Expand and enhance existing unintentional and intentional injury prevention community networks, partnerships, and coalitions.
- Create more opportunities for youth recreation during after-school and weekend hours.
- Incorporate youth mediation and conflict resolution services into school, faith, work, and community activities.
- Provide training to medical professionals on fall prevention and balance for older adults.
- Enhance existing bicycle safety education programs by including rider safety courses and more strongly encouraging bicycle helmet use at community events.
- Encourage private/public collaborations to address environmental issues contributing to injury.

Notes

Related discussion or indicators are located in the chapters on *Healthy Children*, *Older Adults*, *Toxic and Hazardous Materials*, *Animal Control*, and *Alcohol and Other Drugs*.

Table 1

-- Currently no data source.

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Tables 2–4

1. Lancaster County Injury Surveillance Database (Emergency Room Visits), 1994–95.
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Narrative sources

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